ATP: HCG II-2

U. S. DEPARTMENT OF COMMERCE SUREAU OF WASHINGTON NATIONAL BUREAU OF STANDARDS

Letter Circular LC 563

August 9, 1939

CLASSIFICATION AND TOLERANCES FOR COMMERCIAL STANDARD WEIGHTS THAT WILL BE ACCEPTED FOR CERTIFICATION BY THE NATIONAL BUREAU OF STANDARDS

Class A. Standards of this class are required to be of a single piece of metal, without adjusting cavity; of non-magnetic material, either practically non-oxidizable or plated with such metals as gold, platinum, rhodium, etc.; and otherwise suitable for such uses as primary standards of the States.

Class B. Standards of this class are required to be of essentially the same construction as those of Class A except that the surface protection may be of such metals as nickel, or of lacquer, and they may have an adjusting cavity closed by a driven plug. They are suitable for such purposes as secondary standards of the States, or as primary standards for local weights and measures officials and weight and scale makers.

Class C. Weights of this class include "test weights" such as are intended primarily for testing scales and weights used in ordinary commercial transactions, and weights used for certain commercial and industrial purposes demanding relatively superior construction and accuracy.

Tolerances

All tolerances for these classes are applicable both to new weights and to weights in service.

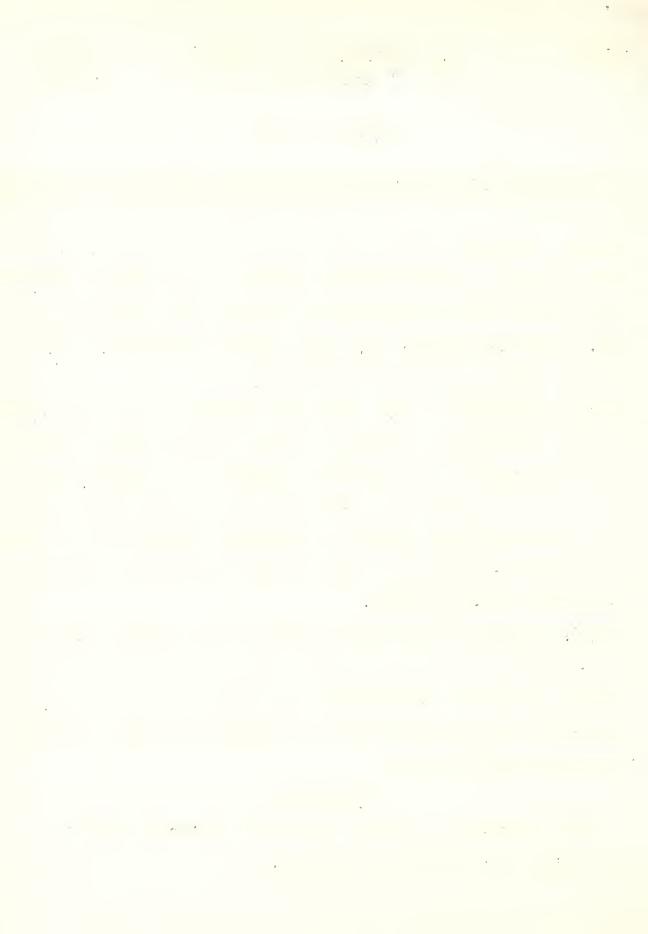


TABLE 1. AVOIRDUPOIS WEIGHTS OF SMALL DENOMINATION:

CLASSES A, B, & C.

	Tolerance		
Denomination Pounds 50 25 20		sses A & B Frains 2 1.2 1.2	Class C Grains 10* 6 6 4
10		0.8	
8 5 4 3 2 1		0.6 0.4 0.4 0.3 0.2	3 3 2 2 1.5 1.0
0.5		0.1	0.5
0.2		0.06	0.3
0.1		0.04	0.2
0.05		0.04	0.2
0.02		0.02	0.1
0.01		0.01	0.05
0.005		0.01	0.05
0.002		0.01	0.05
0.001		0.004	0.02
0.0005		0.002	0.01
0.0002		0.001	0.005
0.0001		0.001	0.005
0.00005		0.0005	0.0025
0.00002		0.0004	0.0020
0.00001		0.0003	0.0015
Ounces	Tol.	in grains	Tol. in grains
8		0.1	0.5
5		0.1	0.5
4		0.1	0.5
2 1 1/2 1/4		0.06 0.04 0.04	0.3 0.2 0.2
1/4		0.02	0.1
1/8		0.01	0.05
1/16		0.01	0.05
1/32		0.01	0.05
1/64		0.00 ⁴	0.02

Note: The tolerances on decimal fractions of an avoirdupois ounce are the same as those on the same decimal fraction of a troy ounce.

^{*}For other than cast iron weights.

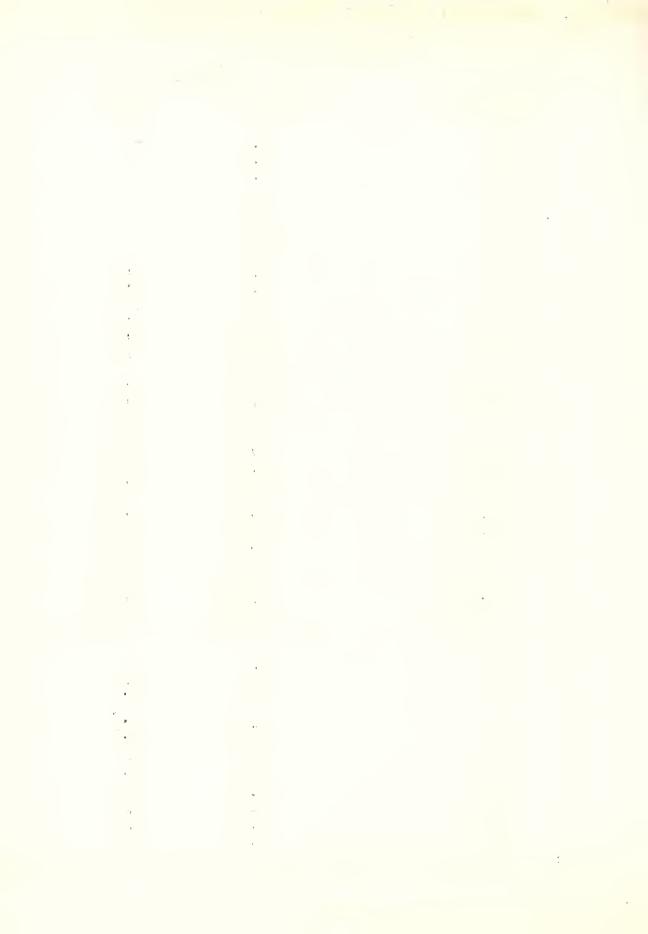


TABLE 2. TROY WEIGHTS -- OUNCES TROY: CLASSES A, B, AND C

Denomination	Toleran Classes A & B	ce Class C
Ounces Troy	Grains	Grains
1000 500 400 300 200 100 50 40 30 20 10 54 32 1 0.5 0.4 0.3 0.2 0.1 0.05 0.04 0.03 0.02 0.01 0.005 0.04 0.03 0.02 0.01 0.005 0.04 0.03 0.02 0.01 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.004 0.005 0.005 0.004 0.005	2 1 1 1 0.4 0.3 0.2 0.1 0.08 0.04 0.04 0.03 0.02 0.01 0.005 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001	10 10 10 10 10 10 10 10 10 10 10 10 10 1

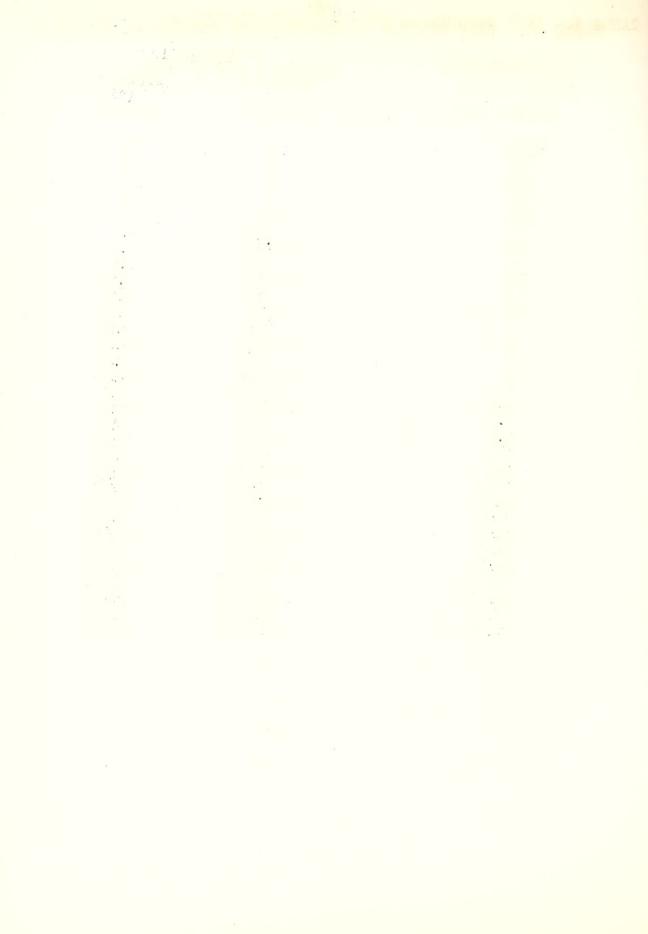


TABLE 3. TROY WEIGHTS -- PENNYWEIGHTS: CLASSES A, B, AND C

	Tolerance	
Denomination Pennyweights	Classes A & B Grains	Class C Grains
10 000	2	10
5000	1	5
4000	1	5
3000	0.6	3
2000	0.6	3
1000	0.4	2
500	0.3	1.5
400	0.2	1.0
300	0,2	1.0
200	0.2	1.0
100	0.1	0.5
50	0.08	0.4
40	0.06	0.3
30	0.06	0.3
20	0.04	0.2
10	0.04	0.2
5	0.02	0.1
4	0.02	0.1
3	0.01	0.05
2	0.01	0.05
1	0.006	0.03

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TABLE 4. APOTHECARIES' WEIGHTS: CLASSES A, B, & C

	Tolerance	
Denomination Ounces ap.	Classes A & B Grains	Class C Grains
12	0,2	1
10	0.2	1.
8	0.1	0.5
6	0.1	0.5
5	0.1	0.5
4	0.1	0.5
3	0.08	0.4
2	0.06	0.3
1	0.04	0.2
Drams ap.		
6	0.04	0.2
5	0.04	0.2
4	0.04	0.2
3	0.02	0.1
2	0.02	0.1
1	0.01	0.05
Scruples		
2	0.01	0.05
1	0.006	0.03

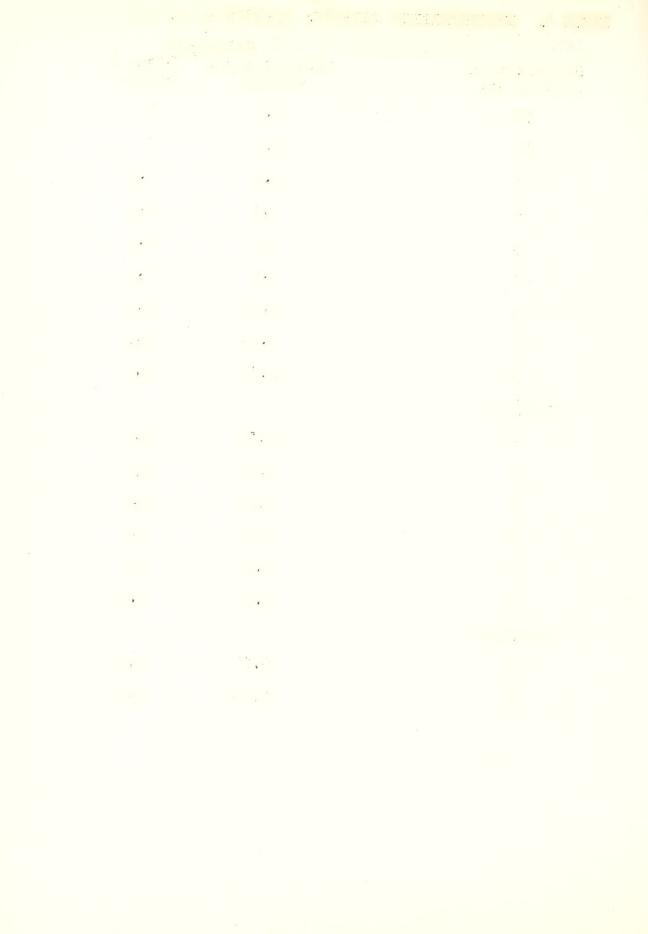


TABLE 5. GRAIN WEIGHTS: CLASSES A, B, & C.

	Tolerance		
Denomination Grains	Classes A & B Grain	Class C Grain	
5000	0.2	1	
2000	0.1	0.5	
1000	0.06	0.3	
500	0.04	0.2	
200	0.03	0.15	
100	0.02	0.10	
50	0.01	0.05	
20	0.006	0.03	
10	0.004	0.02	
5	0.003	0.015	
2	0,002	0.010	
1	0.001	0.005	
0.5	0.001	0.005	
0,2	0.0005	0.0025	
0.1	0.0004	0.0020	
0.05	0.0003	0.0015	
0.02	0.0003	0.0015	
0.01	0.0003	0.0015	
0.005	0.0002		
0.002	0.0002		
0.001	0.0002		

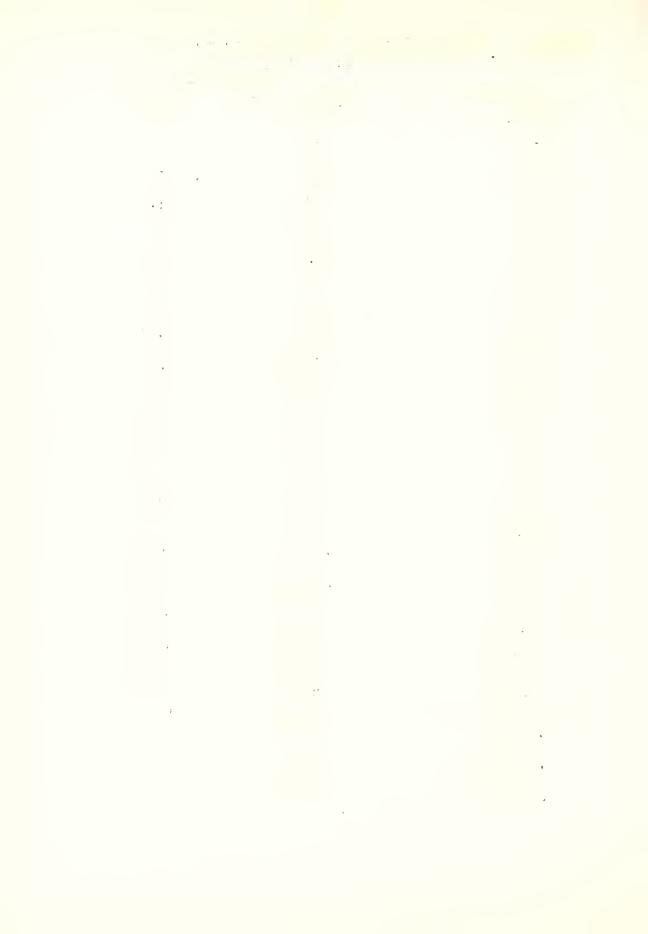


TABLE 6. METRIC WEIGHTS: CLASSES A, B, AND C.

Denomination	Toleranc Classes A and B Milligrams	e Class C Milligrams
Kilograms 20 10 5 2	120 80 50 30 20	600* 400 250 150
Grams		
500 200 100 (52)	14 8 (4)	70 40 30 20
50 (26)	(2)	
20 (13) 10 5 2	8 (4) (2) (1.5) 1.5 0.6	10 7 5 3 2
Milligrams		
500 200 100 50 20 10 5	.3 .14 .10 .07 .04 .03 .02 .01	1.5 0.7 .5 .35 .20 .15 .10

^{*}For other than cast iron weights.



TABLE 7. CARAT WEIGHTS: CLASSES A, B, & C.

	Tolerance	
Denomination Carats	Classes A & B Milligrams	Class C Milligrams
2 500	14	70
2000	12	60
1000	8	40
500	6	30
200	4	20
100	2	10
50	1.5	7
20	1.0	5
10	0.6	3
5	0.4	2
2	0,2	1
1	0.14	0.7
0.5	0,10	0.5
0,2	0.06	0.3
0.1	0.04	0.2
0.05	0.03	0.15
0.02	0.02	0.10
0.01	0.01	0.05

